

ANCHORING RELOCATEABLE STRUCTURES

INTRODUCTION

Relocateable structures such as trailers, tank trailers, mobile homes, semi-trailer vans, portakamps, and portable buildings are subject to movement as a result of high winds. Such structures should be properly anchored if movement creates a life hazard or endangers the public or environment, or if replacement value exceeds \$250,000 (structure and contents), or the structure is vital to a DOE program. Although the conditions listed above may not exist, anchoring is still recommended and should be done to the extent that is practicable. This applies to purchased, leased or locally constructed portable structures, subcontractor's equipment, and also portable structures located on top of other structures.

DEFINITIONS

Relocateable structure - are normally complete modular units with walls, roofs, ceilings and floors, and usually include installed utilities. This definition does not include plastic or fabric units such as tents or air supported structures or prefabricated buildings that are designed to be permanently located (not portable) such as a "Butler" or "Morton" building.

PROCEDURES

1. Anchors and Supports

- a. Each portable structure shall have support and anchoring systems properly designed and installed, which will resist overturning and lateral movement of the portable structure.
- b. Provide at least two anchors on each long side of the structure. Do not locate ties more than eight feet off the end. Locate the anchors at rafters or other structurally adequate member which will transmit the overturning force to the anchor. When mobile trailers for people occupancy are being anchored, a steel cable or band should be placed over the top of the trailer and attached to auger anchors.

2. Design of Anchoring Equipment

Anchoring equipment, when installed, shall be capable of resisting a wind pressure load on the structure of fifteen (15) pounds per square foot. The load on an anchor is determined

by multiplying the wind pressure times the height of the structure times the distance between anchor points. For the end anchor you multiply from the end of the structure to the distance to the mid-point of the next anchor for the horizontal distance. This load determination is based on sound structural engineering principles. For the sizing of steel members, the Steel Construction Manual of the American Institute of Steel Construction shall be used. For any concrete elements, the Building Code Requirements for Reinforced concrete of the American Concrete Institute shall be used.

- a. *Resistance to Weather Deterioration* - anchoring equipment exposed to weathering shall be galvanized.
- b. *Permanency of Connections* - anchoring equipment shall be designed to prevent self-disconnection when ties are slack. Hook ends shall not be used in any part of the anchoring system.

3. Ground Anchors

Ground anchors, including means for attaching ties, shall be located to match the anchoring system.

- a. *Anchoring Design and Installation* - each manufactured ground anchor shall be listed and installed in accordance with the terms of its listing and the anchor manufacturer's instructions and shall include means of attachment of ties.
- b. Each ground anchor shall have the manufacturer's identification and listed model identification number marked thereon so that the number is visible after installation. Instructions shall accompany each listed ground anchor specifying the types of soil for which the anchor is suitable.

4. Exceptions

- a. Exceptions to the provisions of this policy statement may only be granted by written approval of the Laboratory Director.
- b. In consideration of their design and weight distribution, the Portakamp brand portable/relocateable structure commonly used on site are granted an exemption to the Anchoring Relocateable Structures chapter if used under the following conditions:
 - i) When two or more units are placed in a grouping or cluster with their long sides attached to each other.
- c. There are certain portable structures that, due to the nature of their operation, are moved frequently (usually several times a year). It is impractical to enforce this policy in its entirety on such portable structures. In such cases, the local authority having jurisdiction should use good judgment in the application of this policy.

All portakamps not used under the above conditions must be secured according to the Anchorage chapter.